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## Patent Application

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➤ Attached Documents	
1. 1 summary - specification(drawing).	

## Patent Specification

## ➤ Abstract

## Abstract

The present invention relates to the extension of base station controller and reducing method of the mobile communications systems which does not increase the installation fee of a system, and performs an enlargement and reduction of the control station to the simple MMC order at the base station management without the abort of the communications service by using template processor load data. The present invention operates with the simple MMC order at the base station management with the control station and it performs the extension of base station controller / reduction function without the abort of the communications service. And it is input among the operating information only the minimum information which can be variable to an operator and for this, an operator changes PLD. It makes template processor load data and it changes this the fixed information into the basis. Moreover, when it was altogether completed in the base station management with the PLD production and the change file, the corresponding to control station is re-started and it deactivates as an activation. Therefore, like the upper part, And the present invention is to provide the convenience in the enlargement or the operation it is demounted the control station is free according to the simple command of an operator without the abort of the communications service.

## ➤ Representative Drawing

Drawing 4

## ➤ Specification

## Title of Invention

Extension and removal method of base station controller of mobile communication system {Extension and removal method of base station controller of mobile communication system}

## Brief Description of the Drawings

Figure 1 is a control flow diagram, showing the extension of base station controller and reducing method of the prior art the drawing, and fig. 3 the control flow diagram showing the extension of base station controller of the mobile communications systems and preferred embodiment of the reducing method fig. 4, and the command flowchart between each control block which fig. 5 more circumstantially illustrates fig. 4 for illustrating the configuration diagram of the general CDMA mobile communications system, and fig. 2 is the down loading structure of the CDMA system of fig. 1.



The description > of the denotation about the main part of < drawing.

10: base station 11: CC.

12: BCP 20: control station.

21 : CCP 22 : TSB

22a : SIP 22b : SVP

30: switching center 40: base station management.

## The Detailed Description of Invention

### The Purpose of Invention

#### Field of Invention and the Prior Art

The present invention relates to the extension of base station controller and reducing method of the mobile communications systems, more particularly, to the extension of base station controller and reducing method of the mobile communications systems which selectively increases a plurality of control stations managed in the base station management of the mobile communications systems or reduced.

As is well known, the mobile communications systems maintains the moving body reciprocity liver like the vehicle, aircraft, article difference, the ship etc or the communications connecting the fixed point-to-point to the moving body. The system applying the it is various with the FDMA (Frequency Division Multiple Access), the TDMA (Time Division Multiple Access) and CDMA (Code Division Multiple Access) etc. multiplexing method is used.

The mobile communications systems of the general CDMA mode is shown in Figure 1.

As shown in the figure, the CDMA system is divided into the base station (BTS:Base Transceiver System) (10) which is 3 opening part, and the control station (BSC:Base Station Controller) (20) and switching center (MSC:Mobile Services Switching Center) (30). Moreover, while improving the simplicity on an operation and flexibility by being separately the base station management (BSM:Base Station Manager) (40) having the maintenance and maintenance function of a system connected to the base station (10), and the control station (20) and switching center (30), it makes the design of a system facilitated.

The base station management (40) displays all situations occurring in the base station in the work station including ordinarily, the system console, and the tape drive and hard disk etc. And it monitors the input-output of the command of the operation / maintenance and result and message. Moreover, all results of connecting a print and being outputted are printed to an online.

This base station management (40) exchanges information through GCIN having the high-speed packet switch knuckle with each subsystems within the base station (10) and control station (20). And by using the transformed HDLC (High-level Data Link Control) protocol, it communicates with the RS-422 access method to the E1 speed. Moreover, provided is a function including the performance management for the operation of the base station (10) and control station (20) and maintenance and repair, the configuration management, the fault management etc.

In the control station (20), it has the expandable base station (10) to 16 maximums. It has LCIN for connecting these and communicating. And it has GCIN for the IPC communications between the base station management (40) and the other control station (20). Moreover, in this control station (20), it has the TSB (Transcoding Selector Bank) (22) of 40 maximums for the voice communication. In the TSB (22), it has the SVP (Selector Vocoder Processor) (22b) 6 field in which it has the vocoder of 8. And it has the SIP (Selector Interface Processor) (22a) managing this and routes the voice.

As to the T1 Trunk, 2 per the TSB (22) is connected to the switch. Moreover, LCIN for the IPC (Inter Processor Communication) communications of the base station (10) and vocoder are dualized. And it has the dualized CCP (Call Control Processor) (21) that is the processor controlling this control station (20) and \*\*\* base station (10). It communicates for a coupling with the switch to RS-422.

In the base station (10), approximately, the channel card (CC:Channel Card) (11), of 4 and base station (10) whole is controlled. It has the dualized BCP (Base Station Control Processor) (12) controlling the good. And it has BIN routing a communications with the communications of the base station (10) inside and control station (20).

In the mobile communications systems of this kind of the comprised CDMA mode, because of using the mobile communications systems to an initial, an operator uses the separate tool for data manufacture (tool) necessary data. When it is change with the PLD (Program Load Data) and it loads in the base station management (40), the down loading is given to each control station (20) managed in this base station management (40) and a system is used.

Here, the down loading means the function of dropping the software block managing the call processing and operating maintenance of the CDMA system to the target board (the Target Board, for example, the Target Board, for example, CCP, BCP etc) which these actually operate and loading in the memory. Moreover, human-machine interface commands relating with the loading are received from the base station management (40) and this is performed.

The drawing for illustrating the down loading structure of the above-described CDMA system is shown in Figure 2.

As to the down loading action between the bundle-branch block, as shown in the figure, the base station management (40) has loaded blocks in the form of a file. And the CCP (21) loads the memory to load to the low rank. Moreover, the SIP (22a) and BCP (11) carry the block loaded to the software and low rank of the respective oneself. And the SVP (22b) carries the block for its own block and DSP (Digital Signal Processor). The CC (12) carries the block for its own block and CE (Channel Element).

The number of control station (20) which it is manufactured in the system set up in advance and PLD is loaded in the above-described software block, and here it uses are determined. Generally, in one base station management (40), the standards determining the number of this control station (20) the control station (20) managed is the maximum dozens is PLD.

It has this as the basis and the administration whether or not of the control station (20) is determined in the base station management (40). It institutes and applies the base station (10) in \*\*\* and this control station (20) performs the smooth call service.

Moreover, as to PLD, when setting up a system for the first time, a system is already manufactured and it uses the control station (20) based on this, it describes in the above. After increase the control station (20) due to the change of the increment of the subscriber or the reduction other operational environment etc. or wants to reduce, accordingly it again makes PLD, it has to stop the communications service and the base station management (40) again has to compel the loading.

The control flow diagram showing the extension of base station controller of prior art and reducing method was shown in fig. 3. \*\*\*, firstly, new PLD is made (S100). The base station management (40) returns the existing PLD block in the state (S110) (S120) having the processors within a system do the work with the down (down) and stops the communications service and the newly manufactured PLD block is loaded (S130). A next, and the whole control station (20) of \*\*\* are re-started (S140) and it is normally restored the communications service (S150).

But as to the extension of base station controller and reducing method of this kind of conventional mobile communications systems, after increase the control station due to the change of the increment of the subscriber or the reduction other operational environment etc. or wants to reduce, it again makes PLD, it again has to make to do the loading in all control stations of \*\*\* which stops the communications service of a system and used in the base station management. Therefore, the increment have the important problem while PLD is loaded, of the communications service of the control station and base station management being stopped and leading to the discomfort of a subscriber. And to prevent this problem, it moreover has to dualize a system. Therefore, the problem has the other problem accordingly that the installation fee of a system increases.

#### Technical Problems to be solved by the Invention

Therefore, the present invention devises in order to solve the conventional problem as described above. The purpose does not increase the installation fee of a system.



By using the template PLD, it provides the extension of base station controller and reducing method of the mobile communications systems performing an enlargement and reduction of the control station to the simple MMC (Man-Machine Communication) command at the base station management without the abort of the communications service, the abort has.

#### The Structure and Function of the Invention(Device)

The feature of the extension of base station controller of the mobile communications systems for achieving this kind of a purpose and reducing method is the extension of base station controller of the mobile communications systems and reducing method include the PLD generating step produced with reference to template processor load data stored with the modified data input stage, which is input only modified data it uses the MMC order and modified data which is input to above statement step in advance with PLD new and the corresponding control station reboot step which drops the restart instruction in the corresponding control station when succeeding in the PLD change in above statement step.

Moreover, the communications service of a system is continuously maintained in each stage accomplishment. And the related DB is initialized when additionally succeeding in the new PLD change as described above.

Moreover, it is preferable that modified data which is inputted by using the MMC order is the number of the control station, increasing the SIP number, and the MSC Link kind and ASP number.

Therefore, the present invention operates with to the simple MMC order at the base station management with the control station and it performs the extension of base station controller / reduction function without the abort of the communications service. And it is input among the operating information only the minimum information which can be variable to an operator and for this, an operator changes PLD. It makes template processor load data and it changes this the fixed information into the basis. Moreover, when it was altogether completed in the base station management with the PLD production and the change lice, the corresponding to control station is re-started and it deactivates as an activation.

Referring to the figure it circumstantially illustrates. It applies the same sign and the same element as a convention illustrates.

Figure 4 is a control flow diagram showing the extension of base station controller of the mobile communications systems and preferred embodiment of the reducing method. Figure 5 is a command flowchart between each control block more circumstantially illustrating fig. 4.

As described above, the control station (20) is selectively used in the base station management (40) \*\*\* to the maximum dozen. And the general configuration of the CDMA mobile communications system is connected through the switching center (30) and MSC link and the general configuration of the CDMA mobile communications system is connected to the base station (10) through the BTS link and the control station (20) is used. Moreover, when applying the mobile communications systems of this kind of the CDMA mode, it is PLD and necessary data are loaded the base station management (40) with, the down loading is given to each control station (20) managed in this base station management (40) and a system is used. Moreover, in the base station management and control station, it has the software control block for performing the down loading, the various call processing and operating maintenance, it is the same like the bar illustrated through the prior art.

In the meantime, if an operator uses the MMC order of the GUI (Graphic User Interface) and as to the general feature of the present invention for the extension of base station controller at this kind of CDMA system and reduction, as shown in Figure 5, an operator inputs only modified data (S200), corresponding to PLD is changed in the control block performing the present invention called the CATX (Cell Add Tool eXecution) and new PLD is produced (S210).

At this time, it is input among the operating information only the minimum information which can be variable to an operator and PLD is changed. It makes template processor load data and this is changed the fixed information into the basis. In this way, the restart instruction is dropt in the control station (20) when succeeding in the PLD change. All operation of the etc. initializing the BSM AP (application) which is the other operating maintenance program of the base station management (40) are performed (S220).

Referring to Figure 5 if described in more detail, it is the same as that of the next time.

Firstly, the number of the kind (E1,T1), of the MSC link which is the communications link with the number of SIP which the number (0~11) of the control station (20) to increase is input through the MMC order and CATX of the base station management (40) determines whether it is the value in which the jack per station is effective, and it sets up if it is the value in which an enlargement is possible, and switching center (30) and ASP connected to and, the opposite side switching center (30) are input (S200).

Corresponding to PLD is changed in CATX and new PLD is produced with reference to a next, and the four kinds information, which in the above case, is input to an operator and template processor load data which it already makes (S210). At this time, in CATX, the p csb\*\* which is the operating information of SS7 and the p ccp\*\* which is the cell processing and operation parameter of the control station (20) is made. The p com which is common data is modified.

In this way, the restart instruction is dropt in the control station (20) when succeeding in the PLD change. All operation of the etc. initializing the BSM AP (application) which is the other operating maintenance program of the base station management (40) are performed (S220).

That is, if the PLD change and production are completed, the database (it calls because of being below DB.) initialization request used for the state processing of the increased control station (20) is required in the SIMX block for registration admission and status. It demands change in the DB for management DBHX block in the GUI related database modify request and loading agent official business SLX block the database required for the loading.

And then, the signal of computer is sent to the control station (20) and the restarting request is. And then, in the control station (20), the loading request comes in and the corresponding control station (20) is normally marked. A next, and the alarm processing database modification are respected and the signal of computer is sent to the FLMX block. The signal of computer is sent for the network management to the TMN block. In this way, if the increased control station (20) loads and PLD produced is operated in the upper part to the basis, the enlargement function of the control station (20) is completed.

In the meantime, in the control station (20) reduction time, all base station (10) are not used in the control station (20) \*\*\*. Because, if the control station (20) is reduced when it has the base station (10) which is with the operation middle, the call service that is with an in-service is due to be cut down in a preexistence. Therefore, the control station (20) has to be reduced after altogether reducing the base station (10) of \*\*\*.

Although not illustrated in the figure, firstly, the key character separately displays the number of the control station (20) which the control station reducing method of the present invention can reduce in GUI. It deletes the p ccp\*\*, p csb\*\* in which the number of the control station (20) which reduces is input and which is not used. It is simply performed by changing the control station reduction information in the p com PLD.

The control process of the next sends the signal of computer like the extension of base station controller time for the operating maintenance related DB initialization to each application (BSM AP) of the base station management. It sends the reboot signal of computer to the control station (20) and it informs this. If the reduction function is completed in this way, the demounted control station (20) is isolated in a service.

Like the upper part. And the present invention is to provide an enlargement or the convenience which demounted is corresponded to an operation the control station (20) is free according to the simple command of an operator without the abort of the communications service.

#### Effect of Invention(Device)

As described above, according to the extension of base station controller and reducing method of the mobile communications systems, PLD in which an operator is new is made like a convention and a service is stopped. The enlargement / reduction of the control station can be performed without the need to download with reference to template processor load data in the base station management to the MMC instruction single. Therefore, the time to make PLD but be required and the effort of verifying this do not need to be done. Particularly, the break of service of the subscribers is not generated and the suitable convenience can be obtained from the operator aspect. And the convenience has the various effect cutting down the installation fee since no need to dualizing a system for the PLD replace.

#### Scope of Claim(s)

#### Claim [1]

The extension of base station controller and reducing method of the mobile communications systems of the extension of base station controller and reducing method of the mobile communications systems comprising the PLD generating step: produced with reference to template processor load data stored with modified data input stage: modified

data which is input to above statement step in advance are input only modified data it uses the MMC order with PLD new and the corresponding control station reboot step which drops the restart instruction from above statement step in the corresponding control station when succeeding in the new PLD change.

➔ Claim [2]

The extension of base station controller and reducing method of the mobile communications systems of claim 1, wherein the communications service of a system is continuously maintained in each stage accomplishment.

 Claim [3]

The extension of base station controller and reducing method of the mobile communications systems of claim 1, wherein the related DB is initialized when succeeding in the new PLD change as described above.

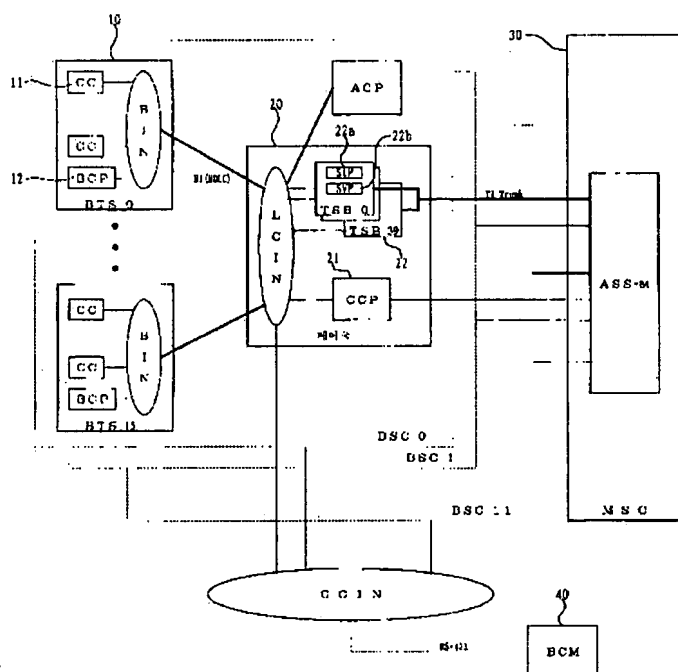
 **Claim [4]**

The extension of base station controller and reducing method of the mobile communications systems of claim 1, wherein modified data which is inputted by using the MMC order is the number of the control station, increasing the SIP number, and the MSC Link kind and ASP number.

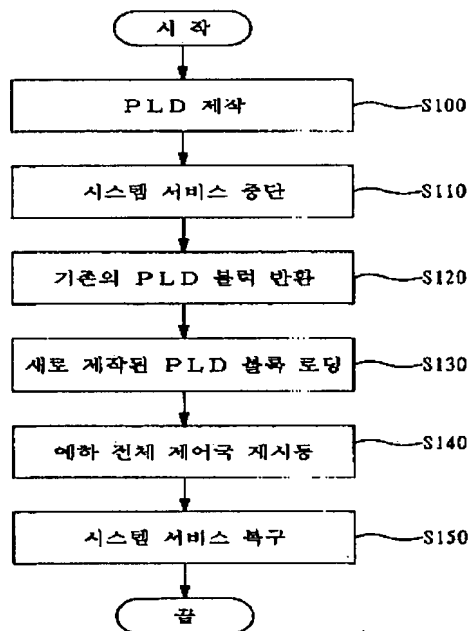
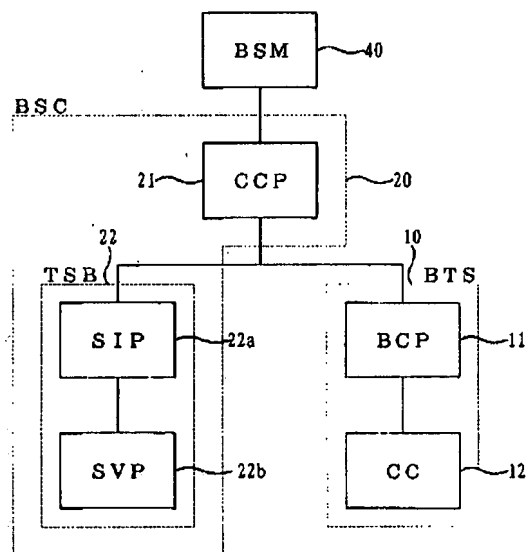
 Drawing

Drawing(s)

**Prüfung:**



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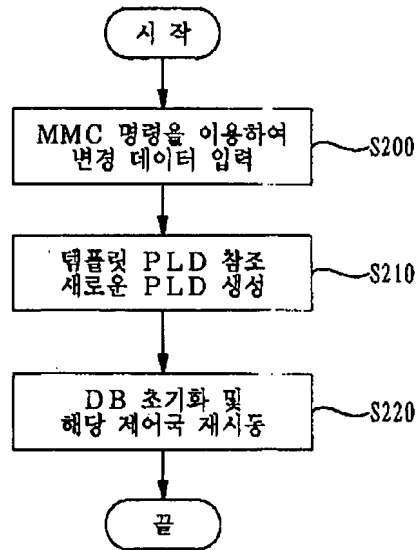


Figure 5

